

CLAIMS

1. A method of detecting a papilloma virus infection in an organism, the method comprising the steps of: obtaining a sample of the organism's cells from the site of potential infection; contacting the cells with a molecule that binds specifically to papilloma virus-E4 protein; and monitoring said binding.
2. A method according to claim 1 wherein the organism is a mammal.
- 10 3. A method according to claim 2 wherein the organism is a human and the papilloma virus is human papilloma virus (HPV).
4. A method according to claim 2 or claim 3, wherein the site of potential infection is the cervix.
- 15 5. A method according to claim 3, wherein the human papilloma virus is selected from the group consisting of HPV types 16, 18, 33, 35, 45, 51, 52, 56, 58 and 61.
6. A method of screening for pre-cancerous cervical lesions, comprising the steps of: obtaining a sample of cervical cells from a subject; contacting the cells with a molecule that binds specifically to HPV E4 protein; and monitoring said binding.
- 20 7. A method of determining the type(s) of HPV infection in a patient, the method comprising the steps of: obtaining a sample of the patient's cells from the site of HPV infection; contacting the cells with a molecule that binds specifically to a subset of HPV E4 proteins; and monitoring said binding.
- 25 8. A method according to any preceding claim wherein the molecule capable of binding to the papilloma virus E4 protein is capable of binding within a hydrophilic region of the E4 sequence.

9. A method according to claim 8, wherein the hydrophilic region is the region which possesses the sequence RPIPKPSPWAPKKHRRRLSSDQDSQTP in HPV16, or its homologue in other papilloma viruses.

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10. A method according to claim 9, wherein the hydrophilic region is the region which possesses the sequence RRIPKPSPWAPKKHR in HPV16, or its homologue in other papilloma viruses.

10 11. A method according to claim 10, wherein the hydrophilic region is the region which possesses the sequence PKPSPWAPKKH(R) in HPV16, or its homologue in other papilloma viruses.

15 12 A method according to any preceding claim, wherein the molecule capable of binding to a papilloma virus E4 protein is an antibody or an antigen-binding fragment thereof.

13. An antibody molecule, or an antigen-binding variant thereof, which binds specifically to HPV E4 protein in the region of amino acid residues
20 RPIPKPSPWAPKKHRRRLSSDQDSQTP of HPV16 E4 protein, or the corresponding hydrophilic, acid/base-rich region of other HPV E4 proteins.